

ZATSEPIN, N.I.

Coli enteritis; survey of the literature. Gig. i san. 24 no.9:  
48-53 8 '59. (MIRA 13:1)

1. Iz Stalinabadskego instituta epidemiologii i gigiyeny.  
(ESCHERICHIA COLI INFECTIONS)  
(ENTERITIS etiol.)

ZATSEPIN, N.I., doktor meditsinskikh nauk Arskiy, V.G.

Basic methods in the control of acute intestinal diseases. Zdrav.  
Tadzh. 7 no. 2:8-12 Mr-Ap '60. (MIRA 13:10)

1. Iz Stalinabadskogo Instituta epidemiologii i gigiyeny.  
(TAJIKISTAN—INTESTINES—DISEASES)

ARSKIY, V.G.; GADZHEY, Ye.F.; ZATSEPIN, N.I.; YASINSKIY, A.V.

Role of flies in the seasonal character of dysentery. Zhur.  
mikrobiol. epid. i immun. 32 no.6:27-32 Je '61. (MIRA 15:5)

1. Iz Stalinabadskogo instituta epidemiologii i gigiyeny.  
(DYSENTERY) (FLIES AS CARRIERS OF DISEASE)

ZATSEPIN, N.I.; ZADVORNYAK, P.V.

Experimental studies of the immunology of colienteritis. Zhur.  
mikrobiol., epid. immn. 32 no.9:112-116 S '61. (MIRA 15:2)

1. Iz Stalinabadskogo instituta epidemiologii i gigiyeny.  
(ESCHERICHIA COLI) (IMMUNITY)

ZATSEPIN, Nikolay Ivanovich, for Doctor ~~of Medical Sciences~~ on the basis  
of the dissertation defended 29 May 1959 in the Council of the Department  
of Hygiene, Microbiology, and Epidemiology of the Academy of Medical  
Sciences USSR, entitled: "<sup>Studies</sup> Investigations of the Etiology, Pathogenesis,  
and Immunology of Colidyspepsiae". (IMVISO USSR, 2-61, 19)

87  
19

Zatsepin, N. N.  
USSR/Physics - Magnetic field of defects

FD-899

Card 1/1      Pub 153-8/26

Author : Zatsepin, N. N.

Title : Experimental study of the topography of magnetic fields which  
are due to natural surface defects in ferromagnetic bodies

Periodical : Zhur. tekhn. fiz. 24, 1224-1228, Jul 1954

Abstract : Direct measurements of the magnetic field due to surface  
filaments on the specimen were studied. The ratio of the  
electric resistance to the magnetic field of bismuth was  
taken as reference point. Experiments were conducted with  
Bi at the temperature of liquid Ni. Indebted to Prof. R. I.  
Yanus and K. V. Grigorov. Four references.

Institution : --

Submitted : October 12, 1953

Zatsepin, N. N.

AUTHOR: Zatsepin, N. N.

106

TITLE: On linear transition processes taking place in a ferromagnetic subjected to the effects of aperiodic, impulse and periodic magnetic fields. (O lineynykh perekhodnykh protsessakh, proiskhodyashchikh v ferromagnetike pri vozdeystvii na nego aperiodicheskogo, impul'snogo i periodicheskogo magnitnykh poley.)

PERIODICAL: "Fizika Metallov i Metallovedenie" (Physics of Metals and Metallurgy), 1957, Vol. IV, No. 1 (10), pp. 41-47, (U.S.S.R.)

ABSTRACT: The transient electro-magnetic processes in a plane-parallel plate of the thickness  $2\delta$ , of infinite length and width made of a substance with a constant magnetic permeability and specific electric conductivity are calculated for the case that from a certain instant  $t = 0$  onwards it is subjected to the effect of an external uniform magnetic field  $H_0 = F(t)$  which is parallel to the planes delimiting the plate. The problem is solved for the particular cases of an exponentially increasing, saw-toothed pulse, rectangular pulse and sinusoidal magnetic fields. It is assumed that eddy currents do not influence the boundary conditions. 2 figures, 9 references, all of which are Russian. Institute of Metal Physics, Ural Branch, Ac.Sc. USSR.

Recd. September 26, 1955. Revised  
version received May 15, 1956.

ZATSEPIN, N.N.

126-1-5/40

AUTHOR: Zatsepin, N.N.

TITLE: On the Non-Linear Theory of Transient Phenomena in a Ferro-Magnetic Plate Magnetised by a Longitudinal Variable Field.  
(K nelineynoy teorii perekhodnykh protsessov v ferro-magnitnoy plastine, namagnichivayemoy prodol'nym peremennym polem)

PERIODICAL: Fizika Metallov i Metallovedeniye, 1957, Vol.V, Nr.1, pp.30-36 (USSR)

ABSTRACT: The linear theory of transient electro-magnetic phenomena which occur within magnetic materials under the action of periodic and aperiodic magnetic fields was considered in detail in Refs.(1) to (4). However, this theory does not yield sufficient information in the case where the magnetisation curve of the material is nonlinear. A solution of this problem has only been given in special cases, for example, V.K.Arkad'ev (Ref.5) considered the solution of the problem of penetration of a plane magnetic wave into the body of a ferro-magnetic space in the case of sudden changes of the intensity of the external magnetic field, assuming that the magnetisation curve has a Z-form. A similar problem was considered by L.R. Neiman (Ref.6) who considered another special form of the magnetisation curve (inclined

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On the Non-Linear Theory of Transient Phenomena in a Ferro-Magnetic Plate Magnetised by a Longitudinal Variable Field.

straight line). In the present work a calculation of transient electro-magnetic phenomena is given in the case of a plane-parallel plate infinitely long and wide and consisting of a substance with a constant specific electrical conductivity,  $\gamma$ , and a small nonlinearity in the magnetisation curve. At time  $t = 0$ , the plate is subjected to a magnetic field  $H_e = f(t)$ . The magnetisation curve  $B(H)$  is approximated to by the formula:

$$B = \mu_0 (H - aH^3); H < H_k = \frac{1}{\sqrt{3a}} \quad (1), \text{ where } H_k$$

is that field at which  $B(H)$  in Eq.(1) reaches a maximum, and  $\mu_0$  is the initial magnetic susceptibility. Solution of the problem satisfies Maxwell's equation:

$$\frac{\partial^2 H}{\partial z^2} = -\frac{\gamma}{c} \mu_d(H) \frac{\partial H}{\partial t} \quad (4), \text{ with the}$$

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following initial and boundary conditions:

$H(z = 0, t) = H(z = 2l, t) = f(t); H(z, t = 0) = 0$  . Here

$f(t)$  is a piecewise continuous function,  $z$  is a coordinate reckoned from the lower surface of the plate along the perpendicular to the surface and  $\mu_d(H)$  is the differential magnetic susceptibility which is a function of the magnetic field. The problem is solved by the method of the "small parameter". The problem is reduced to a solution of the following differential equation:

$$\lambda^2 \frac{\partial^2 h}{\partial z^2} = (1 - 3ch^2) \frac{\partial h}{\partial t} \quad (5), \text{ where:}$$

$$\frac{1}{\lambda^2} = \frac{\gamma}{c} \mu_0 . \text{ The special case of a magnetic}$$

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On the Non-Linear Theory of Transient Phenomena in a Ferro-Magnetic Plate Magnetised by a Longitudinal Variable Field.

field having the form of a rectangular step is considered and the distribution of the magnetic field, induction and the permeability is obtained for this case.

Thanks are given to Prof. R.I.Yanus for valuable advice.

There are 4 figures, 1 table and 6 Slavic references.

ASSOCIATION: Institute of Physics of Metals, Ural Branch of Ac.Sc., USSR. (Institut fiziki metallov ural'skogo filiala AN SSSR)

SUBMITTED: May 16, 1956.

AVAILABLE: Library of Congress.

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*Zatsepin, N.N.*

AUTHOR: Zatsepin, N.N.

126-2-5/35

TITLE: On the non-linear surface effect in a ferromagnetic cylinder in the case of circular magnetization.  
(O nelineynom poverkhnostnom effekte v ferromagnitnom tsilindre pri tsirkulyarnom namagnichivanii).

PERIODICAL: Fizika Metallov i Metallovedeniye, 1957, Vol.5, No.2, pp. 230-233 (USSR)

ABSTRACT: Formulae are derived for determining the electromagnetic values in a cylinder magnetized by a circular alternating current, taking into consideration the variability of the permeability by means of the small parameter method. The phenomenon of the surface effect during passage of an alternating current in a cylinder, assuming constant permeability, was considered by Neyman, L. R., and Kalantarov, P. L. (Ref.1). In this paper the surface effect is considered for a ferromagnetic cylinder, made of a substance with a constant electric conductivity, when magnetized by a circular current which varies with time according to a sinusoidal function for the case that its magnetization curve differs little from the linear and can be approximated by the formula:

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$$B = \mu_0(H - \alpha H^3); H < H_k = \frac{1}{\sqrt{3}\alpha} \quad (1)$$

where  $H_k$  is the field in which  $B(H)$  reaches a maximum value,  $\mu_0$  is the initial permeability, determined from the magnetization curve and

$\alpha$  is a dimensionless parameter.

The differential equation, Eq.(6), is derived, the general solution of which is Eq.(24), p.233.

Acknowledgments are made to Professor R. I. Yanus for his useful advice.

SUBMITTED: June 8, 1956 (initially) and October 18, 1956 (after revision).

ASSOCIATION: Institute of Metal Physics Ural Branch Ac.Sc. U.S.S.R.  
(Institut Fiziki Metallov Ural'skogo Filiala AN SSSR).

AVAILABLE: Library of Congress.

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AUTHOR: ZATSEGIN, N. N. PA - 2136  
 TITLE: Experimental Investigation of the Topography of a Magnetic Field in the Vicinity of Artificial Defects on the Surface of a Ferromagnetic Body. (Eksperimental'noye issledovaniye topografii magnitnogo polya ot iskusstvennykh poverkhnostnykh defektov v ferromagnitnykh telakh. Russian).  
 PERIODICAL: Zhurnal Tekhn. Fiz., 1957, Vol 27, Nr 2, pp 368 - 373 (U.S.S.R.)  
 Received: 3 / 1957 Reviewed: 4 / 1957.  
 ABSTRACT: For the projection of magnetic defectoscopes the topography of the magnetic field in the vicinity of the defect is required. As direct investigations remain invisible because of the smallness of the scale, investigations had to be carried out by means of artificial defects. In order to apply results obtained in this way to natural defects, the known theorem resulting from the theory of magnetostatic similarity can be used. Topography was investigated on open rectangular gaps which were milled out in steel rods in different depths and widths. Unalloyed non-hardened steel of 0.3% C, having a length of 600 mm and a quadratic cross section amounting to 120 x 120 mm was used. The scheme of the system for the measuring of the field on the basis of artificial defects is shown and described. Results are shown in 10 diagrams. The following dependencies were investigated: 1)  $H_x^0(x, z)$  and  $H_z^0(x, z)$ , argument  $x$  at  $z_0 = \text{const}$ , and of  $z_0$  at  $x = \text{const}$  for different magnetizing

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PA - 2136

Experimental Investigation of the Topography of a Magnetic Field  
in the Vicinity of Artificial Defects on the Surface of a  
Ferromagnetic Body.

fields. 2) The dependence of  $H_x^0$ ,  $H_z^0$  on the depth of the open gap.

3) The dependence of  $H_x^0$ ,  $H_z^0$  on  $H_{xe}$  and on the magnetization of  
the rod. Here  $H_x^0$  and  $H_z^0$  are the tangential and the normal components  
of the full field,  $H_{xe}$  and  $H_{ze}$  the components of the "zero field".

The character of the change of  $H_x^0$  and  $H_z^0$  is the same at any point  
for all gaps. The same applies in the case of natural defects.  
(12 illustrations).

ASSOCIATION: Institute for the Physics of Metals of the Ural Branch of the  
Academy of Science of the U.S.S.R., Sverdlovsk.

PRESENTED BY:

SUBMITTED:

AVAILABLE: Library of Congress.

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E192/E382

3.9100

AUTHORS: Drozhzhina, V.I., Zatsepin, N.N., Ponomarev, Yu.F.,  
Fridman, L.A., Shturkin, D.A. and Yanus, R.I.

TITLE: Theory of Ferroprobes with Longitudinal Symmetrical  
Saturation Excitation

PERIODICAL: Fizika metallov i metallovedeniye, 1960, Vol. 10,  
No. 3, pp. 359 - 366

TEXT: Aschenbrenner and Goubau (Ref. 1) described in 1936  
a new highly sensitive method of measuring the potential of  
the magnetic field by means of nonlinear magnetic elements,  
ferroprobes, and they used these for measuring the fluctuations  
of the magnetic field of the Earth. The theory of such probes  
was developed more thoroughly in subsequent work of German  
and Soviet authors (Refs. 2-11), including the authors of this  
paper, for the case of a uniform DC field. Mikhaylovskiy and  
Spektor (Ref. 12) dealt with the operation of these probes  
in a nonuniform field. Considerable progress has been made  
in the techniques of applying them and as a result of this,  
highly sensitive magnetometers with very fast response are

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available, for instance - for investigating the short-period variations of the magnetic field of the Earth, for searching for mineral deposits by means of aeromagnetic prospecting methods, etc. Furthermore, small-size instruments for measuring local values and gradients of highly nonuniform fields (magnetic flaw detectors for detecting invisible cracks in ferromagnetics), an automatic apparatus for various magnetic measurements, etc. have also been built. In spite of that, a large portion of the practically important problems has to be solved by means of inefficient purely empirical approach, since the theory of these probes is either insufficiently accurate or insufficiently general. In this paper the following problems are formulated and partly solved: 1) taking into consideration more accurately the field of magnetic charges of the core and the eddy-current field in it; 2) taking into consideration more accurately the possible nonuniformity of the

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measured field; 3) taking into consideration the influence of the deformation in the initial sections of the hysteresis loop caused by the effect of the measured field. The calculations are made on the basis of the following limitations and assumptions: a) the field to be measured is much smaller than the maxima of the excitation field; b) the influence of magnetic viscosity and after-effects is disregarded; c) the no-load condition is investigated.

It is assumed that the core of the ferro-element is in the form of a solid of revolution and that its axis is taken as the axis OX; a certain point O on this axis is taken as the origin of the coordinates. The distance between an arbitrary point and the axis revolution is denoted as  $r$  and the radius of the lateral surface of the core on its cross-section by a coordinate  $x$  is denoted as  $r_0(x)$ . The

core carries an excitation winding supplied with a current  $i_b$ .

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# Theory of Ferroprobes with Longitudinal Symmetrical Saturation Excitation

which changes with time  $t$  between two limit values  $I_{em}$ ,  
the changes being monotonic and symmetrical, i.e.

$i_b(t) = -i_b(t + T/2)$ , where  $T$  is the period of the  
excitation current. The current produces an excitation  
field  $H_b(x, t)$ . The portion of the core between  $x = a$   
and  $x = b$  is surrounded by a search winding which has  $n_u(x)$   
turns per unit length; the output terminals of this winding  
are connected to a very large resistance so that it can be  
assumed that the current in this winding is very small  
(open-circuit operation). The core is situated in the measured  
field  $H_n(x)$ . The field of eddy currents induced in the  
core is  $H_\phi(r, x, t)$  and the field of magnetic charges in the  
core is  $H_\sigma(x, t)$ . The core is assumed to be so thin that

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the nonhomogeneities of the fields  $H_0$ ,  $H_n$ , and  $H_\phi$  in the transverse direction can be neglected. The vector of the magnetic induction is  $B$  and the total magnetic field is  $H = H_0 + H_n + H_\phi + H_\phi$ . The electromotive force induced in the search winding is given by:

$$e = - 2\pi \int_a^b n_u dx \int_0^r \frac{dB}{dt} r dr \quad (1) .$$

From Eq. (1) it follows that:

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$$\varepsilon = e - e^0 = -2\pi \int_a^b n_u dx \int_0^r \frac{d(B - B^0)}{dt} r dr \quad (2)$$

Eq. (2) can be written in a different form by taking into account the following property of the magnetisation curves of ferromagnetics. It is known from experiments (Refs. 13, 14) that if  $H$  varies monotonically between two limiting values  $H_A$  and  $H_B$ , which fulfil the inequalities:

$$H_A < -H_K; \quad H_B > H_K \quad (3)$$

the terminal portions of the ascending and descending branches of the magnetisation loop follow the branches of the limiting magnetisation loop;  $H_K$  in Eqs. (3) is a constant of the

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# Theory of Ferroprobes with Longitudinal Symmetrical Saturation Excitation

material which is slightly higher than its coercive force. The situation is illustrated in Fig. 1. Consequently, the loops  $B(H)$  can be uniquely determined by  $H_A$  and  $H_B$ . The magnetic inductance for the ascending and descending loops can be expressed by means of the Taylor series. If  $H_n$  is comparatively small, it is sufficient to consider only the first-order terms of these series. Consequently, the difference in the magnetic induction can be expressed by:

$$B - B^0 = \mu_n^0 (H_A - H_A^0) + \mu_d^0 (H - H^0) \quad (7)$$

where

$$\mu_d^0 = \left( \frac{\partial B^0}{\partial H^0} \right)_{H=H^0}$$

is the differential permeability

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at  $H = H^0$  and  $\mu_n^0 = \left( \frac{\partial B}{\partial H_A} \right)_{H=H^0}$ .

It is now necessary to express the variables of Eq. (7) in terms of  $H_n$ . This problem can be solved accurately only for the case when  $H_0$  and  $H_n$  are homogeneous over the whole volume of the core and the core is in the form of an ellipsoid whose thickness is so small that  $H_\phi = 0$ . In this case, Eq. (7) can be written as:

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$$B - B^0 = \frac{4\pi H_n [(4\pi - N)(\mu_{\partial}^0 - \mu_n^0) + \mu_{\partial}^0 \mu_{\partial AK}^0 N]}{(4\pi - N + \mu_{\partial}^0 N)(4\pi - N + \mu_{\partial AK}^0 N)} \quad (11)$$

where  $N$  is the demagnetisation coefficient of the core  
and  $\mu_{\partial AK}^0$  is defined by:

$$B_A - B_A^0 = \mu_{\partial AK}^0 (H_A - H_A^0) \quad (10) .$$

Eq. (2) can now be written as:

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$$\epsilon = AH_n f(t); \quad A = 4\pi^2 \int_a^b n_u(x) r_o^2(x) dx \quad (12) .$$

In the general case it is necessary to consider three additional equations apart from Eq. (7). These equations (including Eq. 7) are linear and homogeneous with respect to all the unknowns and the parameters  $H_n$ . It follows, therefore, that in those cases when the fields  $H_n$  are geometrically similar, i.e. if they can be defined by:

$$H_n = K_n h_n(x) \quad (16)$$

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where  $K_n$  is a coefficient independent of  $x$ ,  $\varepsilon(t)$  will  
be of the same form and the scales of measurement will be  
determined by  $K_n$ . In those cases when not only the scale  
but also the form of  $\varepsilon(t)$  is varying, the quantitative  
comparison of various  $H_n(x)$  can be determined from  $\varepsilon(t)$   
only under certain limiting conditions.

There are 2 figures and 17 references: 13 Soviet and  
4 non-Soviet.

ASSOCIATION: Institut fiziki metallov AN SSSR  
(Institute of Physics of Metals of the AS, USSR)

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L 24823-66 EWI(d)/EWI(m)/EWP(v)/EWP(t)/EWP(k)/EWP(h)/EWP(l) IJF(c) JD/HM

ACC NR 11-000000 (N) SOURCE CODE: UR/0381/65/000/000.00.008

AUTHORS: Zataepin, N. M.; Shcherbinin, V. Ye.; Yezhov, N. M.; Kokhman, L. V.;  
Novitskiy, M. I.; Lyubimskiy, Ye. A.

ORG: Institute of Physics of Metals, AN SSSR (Institut fiziki metallov AN SSSR);  
Pervoural' Nov Pipe Factory (Pervoural'skiy Novotrubnyy zavod)

TITLE: Ferroprobe defectoscope for steel tubes in applied circular magnetic fields

SOURCE: Defektoskopiya, no. 6, 1965, 3-8

TOPIC TAGS: steel, ferromagnetic material, magnetic field, defectoscope, measuring instrument

ABSTRACT: A method is described for locating defects in ferromagnetic tubes made of hot-rolled and cold-drawn steels. The technique consists of measuring both surface and internal defects. The method is based on the principle of the probe emf. The probe is a coil of wire wound around a magnetic core. The probe is inserted into the tube and rotated at the rate of 1000 rev/min. Curves are obtained depicting the probe emf versus the depth of surface defects and the depth of defects on the internal surface of the tube. A large amount of scatter observed in the data is caused primarily by the varied configurations of the defects. For a 4-mm wall thickness, surface defects

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UDC: 620.179.14

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ACC NR: AP6006951

appear to start at depths of 0.1--0.2 mm, in the internal surface defects, at 0.2--0.3 mm. The authors express their gratitude to R. I. Yanus for his valuable advice in evaluating this work. Orig. art. has: 6 figures.

SUB CODE: 14/ SUBM DATE: 16Oct65/ ORIG REF: 003

Card 2/2dd

ACC NR: AR6029465

SOURCE CODE: UR/0196/66/000/006/A008/A008

AUTHOR: Zatsapin, N. N.

TITLE: Experimental investigation of the topography of an inhomogeneous two dimensional magnetic field in the conducting ferromagnetic and nonmagnetic media and the verification of basic theoretically derived relationships. 1. The measurement results and magnetostatic numerical analysis

SOURCE: Ref. zh. Elektronika i energetika, Abs. 6A57

REF SOURCE: [Tr.] In-ta fiz. metallov. AN SSSR, vyp. 24, 1965, 266-280

TOPIC TAGS: topography, nonhomogeneous magnetic field, field theory, ferromagnetic material

ABSTRACT: Experimentally measured and theoretically derived topography is given of the normal and tangential components of the primary field, and magnetic representation of the remanent and secondary magnetic fields as a function of the observer coordinates for a plane ferromagnetic material magnetized by the field set up by a linear current conductor. It was established that the tangential component of the secondary field in a plane object does not change its sign in the whole region of the measured coordinates. The results of a similar investigation are presented involving a ferromagnetic cylindrical object magnetized by the field set up by a closed current conducting loop. It is shown that for this case the tangential component of the

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UDC: 538.12.001.24

ACC NR: AR6029465

secondary field changes its sign at certain points in space. Data are obtained on the shift of maxima of the normal secondary field components relative to the primary for flat and cylindrical objects magnetized by a linear or a closed loop current conductor. Data are also obtained for the variation of the secondary field as a function of distance from the boundary surface of the ferromagnetic sample. [Translation of abstract] 20 illustrations and bibliography of 12 titles. From summary.

SUB CODE: 20

L 08502-67 ENT(1) IJP(o)

ACC NR: ARG029464

SOURCE CODE: UR/0196/GG/000/006/A008/A008

AUTHOR: Zatsepin, N. N.

TITLE: Linear magnetodynamics of conducting media in a two dimensional magnetic field

SOURCE: Ref. zh. Elektronika i energetika, Abs. 6A56

REF SOURCE: [Tr.] In-ta fiz. metallov. AN SSSR, vyp. 24, 1965, 241-265

TOPIC TAGS: field theory, nonhomogeneous magnetic field, alternating magnetic field

ABSTRACT: Formulas are derived for calculating the vector potentials, magnetic fields, and eddy current densities in conducting ferromagnetic and non-magnetic cylinders placed in an inhomogeneous longitudinally radial and sinusoidally varying magnetic field with axial symmetry. The solutions are presented either in the form of a series summation of the original potentials and their magnetic duals or in a finite form. The principle of equivalent potentials (fields) is derived which makes it possible to interchange the conditions for the magnetodynamic and the equivalent magnetostatic problems. The algorithms for finding the dynamic characteristics of potentials inside and outside the cylindrical bodies are found. [Translation of abstract] Bibliography of 3 titles. From summary.

SUB CODE: 20

Card 1/1

UDC: 538.12.001.24

ARG-100

ARG031900

SOURCE CODE: TR/0058/66/000/000/E137/E137

AUTHOR: Zaitsepin, N. N.

TITLE: Experimental investigation of the topography of an inhomogeneous two-dimensional magnetic field in conducting ferromagnetic and nonmagnetic media and the verification of basic theoretically derived relationships. Results of measurements and numerical calculations in magnetodynamics. Part 2

SOURCE: Ref. zh. Fizika, Abs. 6E1068

REF SOURCE: Tr. In-ta fiz. metallov. AN SSSR, vyp. 24, 1965, 281-297

TOPIC TAGS: secondary magnetodynamic field, primary magnetodynamic field, normal field component, tangent field component, ferromagnetic body, conductive nonmagnetic body, two dimensional magnetic field

ABSTRACT: Topographics and frequency characteristics of the normal and tangential components of a secondary magnetodynamic field have been experimentally measured and theoretically calculated as functions of observation point coordinates and of primary field frequency for a flat ferromagnetic body magnetized by an alternating field of a linear current conductor. Shifts between

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L 09402-67

ACC NR: AR6031900

the normal component maxima of primary and secondary dynamic fields have been found. The special features of the shape of secondary dynamic field curves are explained. Relationships between the eddy currents field, the quasi-magnetostatic and the measured secondary field are established for the flat ferromagnetic field. The vector diagrams and phase shift between the primary field and the normal and tangential components of the secondary field of the ferromagnet have been studied as functions of space point coordinates and of the primary field frequency. The results are interpreted. The same investigations were carried out with respect to a conductive nonmagnetic plate placed in an alternating magnetic field of a linear current conductor. It is shown that the results of analytical calculations of the secondary dynamic field for ferromagnetic and conductive nonmagnetic flat bodies are in satisfactory agreement with experimental data. Frequency and other characteristics of the tangential component of the cross-section averaged field of ferromagnetic and nonmagnetic bodies are investigated and the results obtained are interpreted. [Translation of abstract]

SUB CODE: 20, 09/

Card 2/2

ACC NR: AP6035098

SOURCE CODE: UR/0032/66/032/009/1098/1101

AUTHOR: Zatsepin, N. N.; Katnikov, B. N.

ORG: Institute of Physics of Metals, Academy of Sciences SSSR (Institut fiziki metallov Akademii nauk SSSR)

TITLE: Effect of magnetization on the ability of the eddy current method to detect superficial defects

SOURCE: Zavodskaya laboratoriya, v. 32, no. 9, 1966, 1098-1101

TOPIC TAGS: flow detection, magnetization, eddy current, metal surface, ballbearing steel

ABSTRACT: This article is an experimental study of the amplitude-phase characteristics of output electromotive force from artificial flaws, such as fissures in rods of ballbearing steel when they are checked by the eddy current method with a hollow coil and superimposed magnetization with a constant field. The feasibility of this magnetization and the detection of superficial flaws 0.2--0.3 mm deep is demonstrated. When inspecting products (particularly ferromagnetic) by the eddy current method a great deal of noise is imposed on the useful signal. This noise comes from structural and magnetic discontinuities, varying diameter of the article, etc. The signals from discontinuities (the background noise) often exceed the useful signal level. Interfering signal level may be reduced by superimposed magnetization of the products by constant magnetic field of strength  $H_0$ . The present article studies the

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UDC: 620.179

ACC NR: AP6035098

efficiency of this method of reducing noise. With medium and high values of  $H$  the magnetic permeability by volume of material to be inspected is equalized and becomes more uniform. With  $H > 120\text{--}150$  Oe the permeability curve of ShKh15 steel coincides with that of heavily cold-worked material; hence the signals from fluctuations in magnetic permeability of the material are now insignificant in comparison with the signals from actual flaws. The intensity of this optimum field  $H_{\text{opt}}$  depends both on the magnetic properties of the material inspected and the frequency of the variable magnetic field imposed. Since most magnetic and structural discontinuities have a high demagnetizing factor the value of  $H_{\text{opt}}$  is to be increased to several hundred oersteds. Change in amplitude and phase shift in the output emf from the measuring pickup were detected in 20-mm-diameter rods of annealed ballbearing steel artificially fissured. Orig. art. has: 8 formulas and 4 figures.

SUB CODE: 11 13 ~~14~~ / SUBM DATE: none / ORIG REF: 004 / OTH REF: 001

Card 2/2

ACC NR: AR6031899

SOURCE CODE: UR/0058/66/000/006/E137/E137

AUTHOR: Zatsepin, N. N.

TITLE: Linear magnetostatics of media in a two-dimensional magnetic field

SOURCE: Ref. zh. Fizika, Abs. 6E1067

REF SOURCE: Tr. In-ta fiz. metallov. AN SSSR, vyp. 24, 1965, 189-240

TOPIC TAGS: magnetic field, electric potential, linear equation

ABSTRACT: Equations have been derived for the vector potentials and component magnetic fields inside and outside a ferromagnetic tube magnetized by a heterogeneous, radial, azimuthal, magnetic field. The single-value quantities are established for the relationship between the potentials (fields) of corresponding media and the potentials of the original and its images. An interpretation is given for the results obtained. It is proved that under the effect of a radial azimuthal, magnetostatic field, the ferromagnetic tube gives two virtual magnetic images, one of which originates from the external surface effect and the other from the internal surface effect. [Translation of abstract]

SUB CODE: 20/

Card 1/1

L 08369-67 EWT(1)

ACC NR: AR6028144

SOURCE CODE: UR/0058/66/000/005/E111/E112

AUTHOR: Zatsepin, N. N. 41

TITLE: Linear magnetodynamics of conducting media in a two dimensional magnetic field

SOURCE: Ref. zh. Fizika, Abs. 5E851

REF. SOURCE: Tr. In-ta fiz. metallov, AN SSSR, vyp. 24, 1965, 241-265

TOPIC TAGS: magnetic field, electric conduction, magnetostatics, magnetodynamics

ABSTRACT: Formulas are derived for the calculation of the vector potentials, magnetic fields, and density of the eddy currents, for conducting ferromagnetic and nonmagnetic cylinders situated in inhomogeneous longitudinal-radial space and in a time-sinusoidal axisymmetric magnetic field. The solutions are represented either in the form of a sum of a series of potentials of the original and magnetic image, or in finite form. An interpretation of the results is presented. An equivalence principle is derived for the potentials (fields), making it possible to go over from the conditions of the magnetodynamic problem to the conditions of the equivalent magnetic-static problem. Algorithms are obtained for the dynamic characteristics of the potentials inside and outside the cylindrical body. [Translation of abstract]

SUB CODE: 20

Card 1/1 nat

L 08370-67 EWT(1) IJP(s)

ACC NR: AR6028145

SOURCE CODE: UR/0058/66/000/005/E112/E112

AUTHOR: Zatsepin, N. N. 34

TITLE: Experimental investigation of the topography of an inhomogeneous two-dimensional magnetic field in conducting ferromagnetic and nonmagnetic media and a check on the derived fundamental theoretical relations. Results of measurements and of numerical calculation on magnetostatics. I

SOURCE: Ref. Zh. Fizika, Abs. 5E852

REF. SOURCE: Tr. In-ta fiz. metallov, AN SSSR, vyp. 24, 1965, 266-280

TOPIC TAGS: ferromagnetic material, magnetic field measurement, magnetization

ABSTRACT: The author has measured experimentally and calculated theoretically the topographies of normal and tangential components of the fields of the original and of the magnetic image, and of the resultant and secondary magnetic fields, all as functions of the coordinates of the points of observation for a flat ferromagnetic material magnetized by the field of a current-carrying linear conductor. It is established that for a flat body the tangential components of the secondary field do not change sign in the entire region of measurement of the coordinates of the points. Theoretical and experimental quantitative investigations have been carried out of the topography of normal and tangential components of the field of the original and of

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L 08370-67

ACC NR: AR6028145

the secondary field for a ferromagnetic cylindrical body magnetized by the magnetic field of a circular current-carrying loop. It is shown that for a cylindrical body the tangential components of the secondary field reverse sign in definite points of space. Numerical data are obtained theoretically and experimentally on the shift of the maxima of the normal components of the secondary field relative to the original fields, for flat and cylindrical bodies magnetized by a linear conductor and by a current-carrying circular loop. Quantitative data are obtained on the change of the secondary field as a function of the distance from the boundary surface of the ferromagnetic sample. It is shown that the results of analytic calculations of the field of the original and of the secondary field from flat and cylindrical bodies are in good agreement with the experimental data. [Translation of abstract]

SUB CODE: 20

Card 2/2 nst

ZATSEPIN, N.N.

Some characteristics of the operation of ferrozondes with longitudinal excitation when testing ferromagnetic articles for surface defects. Izv. vys. usheb. zav.; fiz. 8 no.2:159-161 '65. (MIRA 18:7)

1. Institut fiziki metallov AN SSSR, Sverdlovsk.



ZATSEPIN, N.N.; SHCHERBININ, V.Ye.

Optimum distribution of ferrosonde elements in the examination  
of ferromagnetic products. Zav. lab. 30 no.8:957-958 '64.  
(MIRA 18:3)

1. Institut fiziki metallov AN SSSR.

VDOVIN, Yu.A.; VLASOV, V.V.; ZATSEPIN, N.N.; KOROBEYNIKOVA, I.Ye.; MIKHEYEV,  
M.N.; RODIGIN, N.M.; TOMILOV, G.S.; SHTURKIN, D.A.; YANUS, R.I.

Discussion on nondestructive testing methods. Defektoskopiia no.1:90  
'65. (MIRA 18:6)

ZATSEPIN, N.N.; SHCHERBININ, V.Yo.

Method for lowering the level of noise-signals due to local cold hardening when testing objects with remanent magnetization for surface defects. Izv. vys. ucheb. zav.; fiz. no. 3:56-61 '64.  
(MIRA 17:9)

1. Institut fiziki metallov AN SSSR.

ZATSEPIN, N.N.; BURTSEV, O.A.; SHCHERBININ, V.Ye.

Increasing the selectivity of magnetic probing of ferromagnetic products  
for extensive surface defects. Defektoskopiia 1 no.3:37-43 '65.

(MIRA 18:8)

1. Institut fiziki metallov AN SSSR.

IVANOV, N.A.; ZATSEPIN, N.N.; SUBOROV, Ye.A.; YEZHOV, N.M.

Magnetometer for measuring model magnetic anomalies.

Geofiz. prib. no. 9165-74 '61. (MIRA 15:11)

(Magnetometer)

ZATSEPIN, N.N.; SHCHERBININ, V.Ye.; YANUS, R.I.

Measurement of inhomogenous magnetic fields by means of  
magnetometric probes. Fiz. met. i metalloved. 14 no.1:30-34  
Jl '62. (MIRA 15:7)

(Magnetic fields--Measurement)

ZATSEPIN, N.N.

Measuring a nonuniform permanent magnetic field and its gradient.  
Priborostroyenie no.5:8-10 My '62. (MIRA 15:5)  
(Magnetic fields--Measurement)

S/032/62/028/012/008/023  
B108/B186

AUTHOR: Zatsepin, N. N.

TITLE: A ferro-probing method of testing steel bars and tubes for fine surface cracks

PERIODICAL: Zavodskaya laboratoriya, v. 28, no. 12, 1962, 1465 - 1466

TEXT: The ferro-probing method of detecting cracks is based on recording the excitation field of flaws by a ferromagnetic pickup. A new type of micro-ferro-probe was designed, consisting of two molybdenum permalloy cores (5 mm long, 100 $\mu$  thick, or 2 mm long, 50 $\mu$  thick) placed 1.5 - 2 mm apart. A primary winding and a measurement winding ( $\pi 3\phi$  (PEF) 0.05 and PEF 0.12 wire) were wound on these cores. Such probes make it possible to measure field strengths ranging from  $10^{-6}$  to  $10^2$  oe. Reliable results can be obtained when the test object has a circular residual magnetization caused by a constant or pulsed direct current (150 kcs). A resonance circuit at the output of the probe serves to filter out the second harmonic. This type of probe makes it possible to investigate cracks of a depth of down to 0.05 mm. There are 2 figures.

Card 1/1



S/119/62/000/005/001/005  
D201/D308

9.6130

AUTHOR: Zatsepin, N. N.

TITLE: Measuring an inhomogeneous constant magnetic field  
and its gradient

PERIODICAL: Priborostroyeniye, no. 5, 1962, 8-10

TEXT: Problems related to measuring the field of a current flowing in an infinitely long conductor with cylindrical or rectangular cross-section are considered. Since any sensing element has finite dimensions, the field is averaged over the region taken by the sensing element. The author investigates how and under what conditions the average field or its average gradient differs from the original values at any given point. Formulas are derived to evaluate the normal and tangential components of the fields and their gradients for both shapes of the conductor and numerical comparison of maximum field gradients in the conductor is made. Formulas are also derived for evaluating the average integral field intensities when the sensing element has finite dimensions

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Card 1/2

. Measuring an inhomogeneous ...

S/119/62/000/005/001/005  
D201/D308

and these values are compared with the actual field value at the point investigated. It is finally shown that for a given configuration of the inhomogeneous field it is possible to determine such optimum dimensions of the pick-up elements that the integrated average field differs little from the true value of this field at the given point. There are 4 figures and 3 tables.

Card 2/2

ZATSEPIN, S.T., kand. med. nauk (Moskva, G-19, Gogolevskiy bul'var, d.29, kv.38); ZHITNITSKIY, R.Ye.

Case of chondrosarcoma of the coracoid process of the scapula.  
Ortop., travm. i protez. 25 no.6:47-49 Je '64.

(MIRA 18:3)  
1. Iz otdeleniya kostnoy patologii (zav. - prof. V.Ya. Shlapoberskiy) Tsentral'nogo instituta travmatologii i ortopedii (dir. - chlen-korrespondent AMN SSSR prof. M.V. Volkov).

ZATSEPIN, S.T., starshiy, nauchnyy sotrudnik; ZHITNITSKIY, R.Ye.

Clinical aspects and treatment of echinococcosis of the bones.  
Khirurgiia 39 no.5:70-77 My '63. (MIRA 17:1)

1. Iz otdeleniya kostnoy patologii (zav. - prof. V.Ya. Shlapoberskiy) i Tsentral'nogo instituta travmatologii i ortopedii (dir. - doktor med. nauk M.V. Volkov).

ZATSEPIN, S.T., starshiy nauchnyy sotrudnik (Moskva)

Report on the activities of the societies of traumatologists-orthopedists in April 1965. Ortop., travm. i protez. 26 no. 10:87-91 0 '65.

Report on the activities of the societies of traumatologists-orthopedists in May 1965. Ibid.:92-94 (MIRA 18:12)

ARENDET, A.A., prof.; ARTARYAN, A.A., kand.med.nauk; BAIROV, G.A., prof.;  
VOLKOV, M.V., prof.; VARSHAVSKAYA, D.Ya., kand. med. nauk;  
VOROKHOBOV, L.A.; GENERALOV, A.I., kand. med. nauk;  
DANIYEL'BEK, K.V., kand. med. nauk; DERZHAVIN, V.M., kand.  
med. nauk; DOLETSKIY, S.Ya., prof.; YERMOLIN, V.N.; ZATSEPIN,  
S.T., kand. med. nauk; ZVYAGINTSEV, A.Ye., dots.; ISAKOV, Yu.F.,  
doktor med. nauk; KOZYREV, V.A., kand. med. nauk; KONOVALOV,  
A.N.; KORNYSANSKIY, G.P., prof.; KLIMANSKIY, V.A., kand. med.  
nauk; KLIMKOVICH, I.G., dots.; KONDRASHIN, N.I., kand. med.  
nauk; LEVINA, O.Ya., kand. med. nauk; LENYUSHKIN, A.I., kand.  
med. nauk; LEYBZON, N.D., doktor med. nauk; MALININA, L.I.,  
doktor med. nauk; MAREYEVA, T.G., kandidat meditsinskikh  
nauk; NERSESYANTS, S.I., kand. med. nauk; OVCHINNIKOV, A.A.;  
OGLEZNEV, K.Ya., kand. med. nauk; ROSTOTSKAYA, V.I., kand.  
med. nauk; STEPANOV, E.A., kand. med. nauk; EPSHTEYN, P.V.;  
OSTROVERKHOV, G.Ye., prof., glav. red.; DOMBROVSKAYA, Yu.F.,  
prof., otv. red.

[Multivolume manual on pediatrics] Knogotomnoe rukovodstvo po  
pediatrii. Moskva, Meditsina. Vol.9. [Pediatric surgery] Khi-  
rurgiya detskogo vozrasta. Red. toma S.I.A. Doletskii. 1964. 654 p.

(MIRA 17:9)

1. Deystvitel'nyy chlen AMN SSSR (for Dombrovskaya). 2. Chlen-  
korrespondent AMN SSSR (for Bairov, Volkov).

SHLAPOBERSKIY, V.Ya. (Moskva, G-19, Gogolevskiy bul'var, 11, kv.8);  
ZATSEPIN, S.T. (Moskva, G-19, Gogolevskiy bul'var, 29, kv.38)

Clinical observations of chondromyxoid bone fibromas. Vop.  
onk. 10 no.12:15-20 '64. (MIRA 18:6)

1. Iz otdeleniya patologii (zav.- prof. V.Ya. Shlapoberskiy)  
TSentral'nogo instituta travmatologii i ortopedii Ministerstva  
zdoravookhraneniya SSSR (dir.- prof. M.V. Volkov).

ZATSEPIN, S.T., kand. med. nauk; SHULUTKO, L.I., prof., zasluzhennyy deyatel'  
~~nauki~~ (Kazan')

Reports. Ortop., travm. i protez. 26 no.7:82-91 J1 '65. (MIRA 18:7)



ZATSEPIN, S.T., kand.med.nauk

Homoplasty of articular ends of the metacarpal bones. Khirurgiia no.8:105-108 Ag '61. (MIRA 15:5)

1. Iz otdeleniya kostnoy patologii (zav. - prof. V.Ya. Shlapoberskiy) Tsentral'nogo instituta travmatologii i ortopedii (dir. - deystvitel'nyy chlen AMN SSSR prof. N.N. Priorov [deceased]) Ministerstva zdavookhraneniya SSSR.  
(BONE GRAFTING)

ZATSEPIN, S.T., kand.med.nauk

Method for stable fixation of bone fragments without using  
metal devices. Khirurgiia no.9:116-117 '61. (MIRA 15:5)

1. Iz otdeleniya kostnoy patologii (zav. - prof. V.Ya. Shlapo-  
berskiy) Tsentral'nogo instituta travmatologii i ortopedii  
(dir. -- deystvitel'nyy chlen AMN SSSR prof. N.N. Priorov [de-  
ceased]) Ministerstva zdravookhraneniya SSSR.  
(FRACTURES)

ZATSEPIN, S.T., kand.med.nauk, referent; NECHAYEVA, Z.P., referent

Minutes of sessions Nos. 224,225 of the Society of Traumatologists  
and Orthopedists of Moscow and Moscow Province. Ortop.travn. i protez.  
18 no.6:73-77 N-D '57. (MIRA 11:4)  
(ORTHOPEDIA)

ZATSEPIN, S. T.

36426. ZATSEPIN, S. T. -- Apparat dlya izmereniya naklona i povorota golovy.  
khirurgiya, 1949, No. 11, s 85-87.

SO: Letopis' Zhurnal'nykh Statey, No. 49, 1949

ZATSEPIN, S.T.

Appliance for the application of plaster collar with senicorset;  
Engelman's type apparatus for application of half-body casts.  
Khirurgiia, Moskva no.4:79-82 April 1951. (CML 20:9)

1. Of the Central Institute of Traumatology and Orthopedics  
(Director--Honored Worker in Science Prof. N.N.Priorov,  
Corresponding Member of the Academy of Medical Sciences) of  
the Ministry of Public Health USSR.

ZATSEPIN, S.T.

Formation of the finger from Filatov' flap. Khirurgiia, Moskva no.8:  
80-81 Aug 1953. (GIML 25:4)

ZATSERIN, S.T., kand.med.nauk

Giant-cell xanthomatous tumors of the tendon sheaths. Ortop.  
travm. i protez. 19 no.4:62-63 JI-Ag '58 (MIRA 11:11)

1. Iz otdeleniya kostnoy patologii (zav. - prof. V.Ya. Shlapoberskiy)  
TSentral'nogo instituta travmatologii i ortopedii (dir. - deystvitel'-  
nyy chlen AMN SSSR prof. N.N. Priorov).

(TENDONS, neoplasms,  
giant cell tumors (Rus))  
(GIANT CELL TUMORS, case reports  
tendon sheaths (Rus))

PRIOROV, N.N. [deceased]; SHLAPOBERSKIY, V.Ya.; ZATSEPIN, S.T.;  
KUZ'MINA, L.P.

Replacement of bone defects by bone grafts following excision of  
benign tumors. Eksp. khir. i anest. 6 no.5:3-10 S-O '61.

(MIRA 15:3)

1. Iz otdela kostnoy patologii (zav. - prof. V.Ya. Shlapoborskiy)  
TSentral'nogo instituta travmatologii i ortopedii (dir. - deystvi-  
tel'nyy chlen AMN SSSR prof. N.N Priorov [deceased]) Ministerstva  
zdravookhraneniya SSSR.

(BONES—SURGERY)  
(BONE GRAFTING)



ZATSEPIN, Sergey Timofeyevich

[Congenital myogenic torticollis] Vrozhdennaia myshchennaia  
krivosheia. Moskva, Medgiz, 1960. 110 p. (MIRA 13:12)  
(NECK--ABNORMITIES AND DEFORMITIES)

ZATSEPIN, S.T., starshiy nauchnyy sotrudnik, referent.

Report on the activity of the societies of traumatologists  
and orthopedists in June 1965. Ortop., travm. i protez.  
26 no.11:92-94 N '65. (MIRA 18:12)

ZATSEPIN, A.V. (Chelyabinsk); ZACHAROVAYA, I.I. (Chelyabinsk); KUCHNOV,  
V.Ye. (Chelyabinsk)

Microrelief on the surface of nickel-chromium alloys under the  
effect of small plastic deformation. Trv. AN SSSR Met i por.  
dolo no.2:172-176 Kr-4p164 (MIRA 17:8)

ZATSEPIN, S.V.; KOCHNOV, V.Ye.

Structure of slip bands. Fiz.met.1 metalloved. 14 no.5:673-  
677 N '62. (MIRA 15:12)

1. Chelyabinskiy nauchno-issledovatel'skiy institut  
metallurgii.  
(Metallography) (Dislocations in metals)

ACCESSION NR: AP4029843

8/0279/64/000/002/0172/0176

AUTHOR: Zatsepin, S.V. (Chelyabinsk); Zlochevskaya, I.I. (Chelyabinsk); Kochnov, V.Ye. (Chelyabinsk)

TITLE: The micro relief on the surface of nickel-chromium alloys during small plastic deformations

SOURCE: AN SSSR Izv. Metallurgiya i gornoye delo, no.2, 1964, 172-176

TOPIC TAGS: micro relief, Kh20N80 alloy, EI437B alloy, nickel based alloy, chromium containing alloy, plastic deformation, high temperature alloy, optical microscopy, electron microscopy, shear

ABSTRACT: The authors determined the behavior of this metal in an elastic-plastic region and, consequently, the beginning of the metal flow and its tendency toward plastic deformation. The purpose of the present work was to study the deformation reliefs of plastically-deformed high-temperature alloys at room temperatures and small degrees of deformation. The investigation was made by optical and electron microscopy on samples on Kh20N80 and EI437B alloys. Microphotographs of the surfaces of these alloys were presented which show various stresses and shears of the surface. The photographs of the micro-reliefs showed extremely nonuniform deforma-

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ACCESSION NR: AP4029843

tion of grains in the initial stages of deformation. In most instances, the great magnitude of shears was observed within the grains. In the initial stages of deformation, no thin structure of the slip lines in the alloys under study was observed. The process of forming slip lines into bands can obviously occur due to the transition of the helical dislocations from one surface to the other, parallel to the initial. The strengthening phase leads to the decrease of the active systems and to an increase of shear along the slip planes. Orig. art. has: 5 figures.

ASSOCIATION: none

SUBMITTED: 17Jun63

DATE ACQ: 30Apr64

ENCL: 00

SUB CODE: ML

NO REF SOV: 002

OTHER: 001

Card 2/2

S/126/62/014/005/004/015  
E111/E435

AUTHORS: Zatsepin, S.V., Kochnov, V.Ye.

TITLE: Structure of slip lines

PERIODICAL: Fizika metallov i metallovedeniye, v.14, no.5, 1962,  
673-677

TEXT: It is impossible to study with the electron microscope changes in the fine structure along slip lines because of their considerable length. An optical method for this purpose is described, based on the examination of the surface with dark-field illumination: the slip lines appear bright under these conditions. The relative extent of the brightness along the lines indicates differences in formation during deformation and enables the sizes of the fine slip lines and their development along the whole slip line to be evaluated. Deformation nonuniformity was observed not only in passing from grain to grain and within one grain but also along a slip line, this being particularly pronounced in "hatchuring" of the lines. As deformation increases the height of the shear steps in lines near grain boundaries decreases. In the central parts of the grains there

Card 1/2

Structure of slip lines

S/126/62/014/005/004/015  
E111/E435

is both a general decrease in the height of shear steps and the development in some lines of coarse slip for deformations up to 10%. The method was studied with type X 20H80 (Kh20N80) nichrome, rolled, heat treated and cooled in vacuum and electropolished. There are 4 figures. ✓

ASSOCIATION: Chelyabinskiy nauchno-issledovatel'skiy institut metallurgii (Chelyabinsk Scientific Research Institute of Metallurgy)

SUBMITTED: February 13, 1962

Card 2/2



ZATSEPIN, T.S.

(Child and juvenile orthopedics) Moskva, Medgiz, 1949. 279 p.

ZATSEPIN, T. S.

"Ankylosed Vertebral Arthritis and Its Treatment,"

Sov. Med., No. 5, 1949. Prof., Surgical Dept.,

Central Inst. Health Resorts,

-c1949-.

ZATSEPIN, T.S.

Poliomyelitis and new therapeutic methods. Fel'dsher & akush. no.4:30-  
33 Apr 1953. (CINL 24:4)

1. Professor. 2. Moscow.

ZATSEPIN, T.S.

TSUKER, M.B., professor

"Poliomyelitis, infantile paralysis of the spinal cord." M.P.Chumakov,  
I.M.Prisman, T.S.Zatsepin. Reviewed by M.B.TSuker. Klin. ned. 32  
no.6:89-90 Je '54. (MLRA 7:8)  
(POLIOMYELITIS) (CHUMAKOV, M.P.) (PRISMAN, I.M.)

*ZATSHIPIN, T.S.*  
ZATSHIPIN, T.S., professor (Moskva)

Significance of the rapid growth of the child's body in ortho-  
pedic therapy. Ortop.travm. i protez. no.2:30-32 Mr-Apr '55  
(GROWTH, in infant and child (MLRA 8:10)

fast growing, importance in orthopedic ther.)  
(ORTHOPEDICS  
pediatric, significance of growth in orthopedic ther.)

ZATSEPIN, T.S.

[Orthopedics for children and adolescents] Ortopediia detskogo i  
podrostkovogo vozrasta. Moskva, Medgiz, 1956. 318 p. (MIRA 10:2)  
(ORTHOPEDIA)

ZATSEPIN, T.S., professor (Moskva)

Congenital clubfoot and its treatment. Fel'd. i akush. 21 no.4:  
15-17 Ap '56. (MLRA 9:8)

(FOOT--ABNORMALITIES AND DEFORMITIES)

AKULOVA, R.F., prof.; ANTELAVA, N.V., prof.; AR'YEV, T.Ya., prof.;  
 BAIROV, G.A., prof.; VELIKOKETSKIY, A.N., prof.; GAEAY,  
 A.V., prof. [deceased]; GILORYEV, G.Ye., prof.;  
 DOBROVOL'SKIY, V.K., prof.; DOLINA, O.A., kand. med. nauk;  
 ZATSEPIN, T.S., prof.; KIRICHINSKIY, A.R., prof.; KOZLOVA,  
 A.V., prof.; KOTOV, A.P., prof.; KRAKOVSKIY, N.I., prof.;  
 KUZIN, M.I., prof.; L'VOV, A.N., prof. [deceased];  
 MITYUNIN, N.K., kand. med. nauk; MIVARELIDZE, Sh.I., prof.,  
 [deceased]; NOVACHENKO, N.P., prof., zasl. deyatel' nauki  
 USSR; OSIPOV, B.K., prof.; PIKIN, K.I., prof.; POSTNIKOV,  
 B.N., prof.; RAKOV, A.I., prof.; STRUCHKOV, V.I., zasl.  
 deyatel' nauki RSFSR, prof.; FAYERMAN, I.L., prof.  
 [deceased]; FILATOV, A.N., prof.; SIMELEV, I.V., prof.  
 [deceased]; PETROVSKIY, B.V., zasl. deyatel' nauki RSFSR,  
 prof., otv. red.

[Multivolume manual on surgery] Mnogotomnoe rukovodstvo po  
 khirurgii. Moskva, Meditsina. Vol.2. 1964. 771 p.

(MIRA 18:1)

1. Deystvitel'nyy chlen AMN SSSR (for Antelava, Petrovskiy).
2. Chlen-korrespondent AMN SSSR (for Bairov, Novachenko,  
 Struchkov, Filatov).



ZATSEPIN, Timofey Sergeevich

[Congenital clubfoot and its treatment in childhood] Vrozhdennoe  
kosolapost' i ee lechanie v detskom vozraste. Moskva, 1947. 95 p.  
(FOOT---ABNORMALITIES AND DEFORMITIES) (MIRA 13:8)

*ZATSEPIN V.F.*  
BRODSKIY, M.V.; PETROV, V.V.; NOVOSPASSKIY, G.D.; ZATSEPIN, V.F.

Remote signaling and remote control for radio relay lines.

Elektrosvyaz' 11 no.8:26-31 Ag '57.

(MIRA 10:12)

(Radio relay systems)

ZATSEPIN, V. F.

TRANSMISSION

"Remote Signalization and Remote Control over Radio Relay Lines", by M. V. Broadkiy, V. V. Petrov, G. D. Novspasskiy, and V. F. Zatsepin, Elektrosvyaz', No 8, August 1957, pp. 26-31.

Brief presentation of the fundamental principles of the construction of automation, remote-control, and remote-signalization circuits for the presently designed radio R-60 and "Vesna", relay lines with a number of trunks up to 2.5. The operation of the relay remote-control and remote-signalization circuits in the main and intermediate stations is analyzed.

Card 1/1

DEMCHENKO, Valentin Petrovich, kand.ekonom.nauk; ZATSEPILIN, V.G.,

[Zatsepilin, V.H.], kand.ekonom.nauk, glavnyy red.

[Development of the socialist national economy in the Polish  
People's Republic] Budivnytstvo sotsialistychnoi ekonomiky  
v Pol's'kii Narodnii Respublitsi. Kyiv, 1959. 70 p. (Tova-  
rystvo dlia poshyrennia politychnykh i naukovykh znan' Uk-  
rains'koi RSR. Ser.1, no.28) (MIRA 12:11)

(Poland—Economic conditions)

<sup>5</sup>  
ZATZENIN, V. I.

V. I. Zatzepin, G. G. Abrikosov, N. A. Berezina, Z. S. Bronstein  
N. S. Gayevskaya, N. W. Kondakov, K. I. Meyer, V. I. Olifan, P. I.  
Usatchev, Z. A. Filatova, A. A. Shorin, T. F. Chitchapova, Z. G.  
Shchedrin, V. A. Jashnov co-authors of the book "Definition - Fauna  
and Flora of Northern Seas in USSR" edited by Prof. N. S. Gayevski,  
and approved by the Ministry of USSR Higher Education as a manual  
for universities. State Publishing "SOVIET SCIENCE", Moscow - 1948.

SO: CIA 654015

ABROSIMOV, A.T.; ZATSEPIN, V.I.; SOLOV'YEVA, V.I.; KRISTIANSEN, G.B.;  
CHIKIN, P.S.

Structure of extensive air showers at sea level. Izv.AN SSSR. Ser.  
fiz.19 no.6:677-680 N-D '55. (MIRA 9:4)

1.Fizicheskiy institut imeni P.N.Lebedeva Akademii nauk SSSR i  
Moskovskiy gosudarstvennyy universitet imeni M.V.Lomonosova.  
(Cosmic rays) (Nuclear physics)

ZATSEPIN, V. I. Cand Phys-Math Sci -- (diss) "Study of the function<sup>r</sup> of the spatial distribution of charged particles of extensive atmospheric downpours at sea level." Mos, 1957. 12 pp (Mos Order of Lenin and Order of Labor Red Banner State Univ im M. V. Lomonosov. Physics Inst im P. N. Lebedev, Acad Sci USSR), Bibliography: pp 11-12 (12 titles) / 130 copies (KL, 44-57, 98)

2 ZATSEPIN, V.I.

AUTHOR ZATSEPIN, V.I. 56-7-27/66  
 TITLE Analysis of the properties of the Electron-Photon Component of Extensive Atmospheric Showers in the Lower Third Part of the Atmosphere.  
 (K analizu svoystv elektronno-fotonnoy komponenty shirokikh atmosfer-  
 nykh livney v nizhney treti atmosfery,  
 PERIODICAL Zhurnal Eksperim.i Teoret. Fiziki, 1957, Vol 33, Nr 7, pp 190-196,  
 (U.S.S.R.)  
 ABSTRACT The evaluation of experimental data obtained in this country as well as abroad showed that the energy spectrum of electrons in the lower third part of the atmosphere satisfies the condition  $1,3 > \alpha > 1,2$  in the energy range  $E \leq 10^9$  eV. ( $\alpha$  - parameter of the cascade theory, which characterizes the energy spectrum of the electrons). This holds only if there are no great fluctuations on the occasion of the propagation of broad atmospheric showers.  
 In the case of the spectrum mentioned the spatial distribution of the electrons in a distance of 1,5 - 250 m from the axis of the shower can be explained in a unique manner by a multiple Coulomb scattering. (With 2 illustrations and 8 Slavic references)  
 ASSOCIATION Physical Institute im. P.N. Lebedev, of the Academy of Sciences of the USSR.  
 (Fizicheskiy institut im. P.N. Lebedeva Akademii nauk SSSR)  
 SUBMITTED 9.1.1957  
 AVAILABLE Library of Congress.  
 Card 1/1



AUTHORS: Dovzhenko, O. , Zatsepin, V. , Murzina, Ye. , Nikol'skiy, S.,  
Rakobol'skaya, I. , Tukish, Ye. 20-113-5-14/59

TITLE: Investigation of Extensive Atmospheric Showers of Cosmic  
Radiation (Issledovaniye shirokikh atmosferykh livney kos-  
micheskogo izlucheniya)

PERIODICAL: Doklady Akademii Nauk SSSR, 1958, Vol. 118, Nr 5, pp.899-902  
(USSR)

ABSTRACT: In autumn 1955 the energetic characteristics of extensive at-  
mospheric showers were investigated at an altitude of 3860 m  
above the sea level. The lay-out of the experimental  
equipment is illustrated in a diagram. Extensive atmospheric  
showers caused by primary particles with an energy of from  
 $2 \cdot 10^{13}$ - $10^{16}$  eV were separated by fourfold discharges in two  
groups of counters (with a mutual distance of two meters).  
A number of about  $4 \cdot 10^4$  extensive atmospheric showers were  
recorded. A great number of counters was employed in these  
measurements. The energy spectrum of the myons at a distance

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20-118-5-14/59

## Investigation of Extensive Atmospheric Showers of Cosmic Radiation

from the shower axis not exceeding 10 m can be expressed in the form  $\sim 1/E^m$  in the energy interval of the myons of from  $E = 1,5 - 3,5$  BeV. Here holds  $m = 0,27 \pm 0,06$ . The authors report on the observations of the passage of shower cores through a detector for penetrating particles which was mounted at a depth of a water equivalent of  $800 \text{ g/cm}^2$ . The computed shower rate caused by primary particles with an energy of  $E < 6 \cdot 10^{14} \text{ eV}$  completely agrees with the observed rate, whereas the observed shower rate caused by primary particles with  $E > 6 \cdot 10^{14} \text{ eV}$  is several times as high as the expected rate. The spectrum of the electron-photon component in the core parts of the here observed atmospheric showers was investigated by means of a great cloud chamber, that is to say for energies of from  $2 \cdot 10^8 - 10^{10} \text{ eV}$  at a varying distance from the shower axis. The experimentally determined spectra of the electron-photon component at distances up to 4 m from the shower axis showed a decrease of electrons and photons with high energies, contrary to predictions of cascade theory. This only holds, if the energy of the neutral pions responsible for the generation of the electron-photon component is set equal to  $10^{12} \text{ eV}$ . This contradiction between experiment and theory can be removed, if an essential in-

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20-118-5-14/59

## Investigation of Extensive Atmospheric Showers of Cosmic Radiation

fluence of the neutral pions with energies above  $10^{10}$  eV on the electron-photon component of the shower is assumed. Filters of various thickness of different materials were mounted above the ionization chambers. This permitted to measure the energy flow, which is carried by the electron-photon component of the shower at various distances from the shower axis and also the determination of the energy of the nuclear-active shower particles. The energy of the particle with the highest energy in the core of the extensive atmospheric showers with less than  $10^5$  particles amounts to 10 % in the mean of the energy of the electron-photon component of the shower at the observation altitude. The remaining nuclear-active particles in the shower are distributed according to the law  $\sim 1/E^n$ , E denoting the energy of the nuclear active particles and  $n = 0,9 \pm 0,2$  holding. The cores of the extensive atmospheric showers with a number of particles exceeding  $10^{15}$  are very complicated. There are 3 figures, and 6 references, 6 of which are Soviet.

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Investigation of Extensive Atmospheric Showers of Cosmic Radiation 20-1181-5-14/59

ASSOCIATION: Fizicheskii institut im. P. N. Lebedeva Akademii nauk SSSR  
(Institute for Physics imeni P. N. Lebedev AS USSR)

PRESENTED: August 29, 1957, by D. V. Skobel'tsyn, Member, Academy of  
Sciences, USSR

SUBMITTED: July 22, 1957

Card 4/4

ZATSEPIN, V. I.

CERENKOV RADIATION OF EXTENSIVE AIR SHOWERS OF COSMIC RAYS  
A. E. Chudakov, N.M. Nesterova, V. I. Zatsenin

Measurements of Cerenkov radiation produced in the atmosphere by particles of extensive showers were continued in 1959 in the Pamir Mountains at 3860 m above sea level. The results of our previous measurements are given in (1,2).

The apparatus consisted of an optical system that records flashes and a hodoscope with pulses in two light detectors in the center of the apparatus coincided.

Report presented at the International Cosmic Ray Conference, Moscow, 6-11 July 1959

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S/627/60/002/000/002/027  
D299/D304

3.2410 (1559, 2205, 2805)

AUTHORS: Chudakov, A. Ye., Nesterova, N. M., Zatsepin, V. I., and  
Tukish, Ye. I.

TITLE: Cherenkov radiation of extensive air showers in cosmic  
rays

SOURCE: International Conference on Cosmic Radiation. Moscow,  
1959. Trudy. v. 2, Shirokiye atmosferye livni i kas-  
kadnyye protsessy, 47-55

TEXT: The results are given of measurements carried out in the  
autumn of 1957 at the Pamir Mountain (3860 m). The apparatus con-  
sisted of 10 light detectors and 9 hodoscope units with Geiger  
counters. Two types of light detectors were used for the measure-  
ments. Both types incorporated photomultipliers 6C-1 (BS-1) or  $\Phi 37$ -  
24 (FEU-24). The apparatus included 6 detectors of the second type  
(with mirror). A special electronic circuit permitted measuring the  
magnitude of the light flares in all the detectors. After process-  
ing the data, it was possible to determine for each shower: 1) The

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D299/D304

Cherenkov radiation of ...

intensity of the light flux at 5 points; 2) the density of the particle flow at 9 observation points and hence the position of the shower axis and the total number of particles; 3) the direction of the shower. Various showers were analyzed, with number of particles ranging from  $2 \cdot 10^4$  to  $1.3 \cdot 10^7$ . The dependence of the intensity of the Cherenkov light on the distance from the shower axis was obtained for showers with number of particles  $N$  ranging from  $2 \cdot 10^4$  to  $2 \cdot 10^7$  at intervals of 10 to 250 m. from the axis, and various angles of incidence of the showers. Assuming the relationship  $E = AN$ , where  $E$  is the energy spent by the shower in the atmosphere, one obtains for  $A$  approx. 10 ev. Comparing the values of the light flares from showers with different number of particles, it is possible to determine the relationship between  $E$  and  $N$ . For showers with  $N = 10^5$  to  $N = 1.4 \cdot 10^6$ , this relationship is  $E \sim N^{0.8 \pm 0.05}$ . This fact has to be taken into consideration when passing from the number spectrum to the energy spectrum of primary par-

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D299/D304

ticles. Figures show that the relationship between the number of particles and the intensity of the light in the shower varies as a function of the inclination of the shower. The simultaneous measurement of the light intensity at predetermined distance from the axis, and of the total number of particles makes it possible to ascertain (in principle) the role of fluctuations in the development of showers. It was found, by comparing the fluctuations at the Pamir level and at sea level (according to measurements carried out in 1959 at Moscow State University) that the fluctuations have no significant part in explaining the altitude variation of showers. There are 9 figures and 3 references: 2 Soviet-bloc and 1 non-Soviet-bloc. The reference to the English-language publication reads as follows: W. Galbraith, J. V. Jelley. Nature, 171, no. 4347, 349, 1953. [Abstractor's note: Importance of the above investigation is stressed by K. Greisen in his article "Cosmic Ray Showers", Annual Review of Nuclear Science, v. 10, 1960, 63-108; same article also contains a critical appraisal of other results by Soviet investigators, reported in this Trudy.]

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GERASIMOVA, N.M., otv.red.toma; NIKISHOV, A.I., zamestitel' red.toma;  
ZHDANOV, G.B., glavnyy red.; IVANENKO, I.P., zamestitel' glavnogo  
red.; ZATSEPIN, V.I., red.; KHRENOV, B.A., red.; DORMAN, L.I., red.;  
TULINOV, V.F., red.; SYROVATSKIY, S.I., red.; FEDOROV, V.M., red.;  
VAVILOV, Yu.N., red.; ABROSIMOV, A.T., red.; GURCOV, K.P., red.izd-va;  
BRUZGUL', V.V., tekhn.red.

[Transactions of the International Conference on Cosmic Rays] Trudy  
Mezhdunarodnoi konferentsii po kosmicheskim lucham. Moskva, Izd-vo  
Akad.nauk SSSR. Vol.1. [Nuclear interactions at energies of  $10^{11}$ - $10^{14}$  ev.]  
Iadernye vzaimodeistviia pri energiakh  $10^{11}$ - $10^{14}$  ev. 1960. 335 p.  
(MIRA 13:9)

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(Nuclear reactions)

ZHDANOV, G.B., glavnyy red.; IVANENKO, I.P., zam.glavnogo:red.; ZATSEPIN,  
V.I., otv.red.toma; KHRENOV, B.A., zam.red.toma; GERASIMOVA, N.M.,  
red.; NIKISHOV, A.I., red.; DORMAN, L.I., red.; TULINOV, V.P.,  
red.; SYROVATSKIY, S.I., red.; FEDOROV, V.M., red.; VAVILOV, Yu.N.,  
red.; ABROSIMOV, A.T., red.; GUROV, K.P., red.izd-va; EHRKGAUT,  
V.G., red.izd-va; BRUZGUL', V.V., tekhn.red.

[Extensive air showers and cascade processes] Shirokie atmosferye  
livni i kaskadnye protsessy. Moskva, Izd-vo Akad.nauk SSSR, 1960.  
351 p. (Trudy mezhdunarodnoy konferentsii po kosmicheskim lucham,  
no.2). (MIRA 13:12)

1. International Conference of Cosmic Radiation.  
(Cosmic rays)

ZHDANOV, G.B., glav. red.; IVANENKO, I.P., pom. glav. red.;  
SYROVATSKIY, S.I., red. toma; GERASIMOVA, N.M., red.;  
NIKISHOV, A.I., red.p ZATSEPIN, V.I., red.; KHRENOV, V.A.,  
red.; DORMAN, L.I., red.; TULINOV, V.F., red.; FEDOROV,  
V.M., red.; VAVILOV, Yu.N., red.; ABROSIMOV, A.T., red.

Proceedings of the Moscow Cosmic Ray Conference, July 6-11, 1959. Moscow.  
Vol.3. 1960. 253 p.

(No subject heading)

ZHDANOV, G.B., glavnyy red.; IVANENKO, I.P., zam.glavnogo red.; DORMAN, L.I., otv.red.toma; TULINOV, V.F., zam. redaktora toma; GERASIMOVA, N.M., red.; NIKISHEV, A.I., red.; ZATSEPIN, V.I., red.; KHRANOV, B.A., red.; SYROVATSKIY, S.I., red.; FEDOROV, V.M., red.; VAVILOV, Yu.N., red.; ABROSIMOV, A.T., red.; GUS'KOV, G.G., red.izd-va; BRUZGUL', V.V., tekhn.red.

[Transactions of the International Conference on Cosmic Rays] Trudy Mezhdunarodnoi konferentsii po kosmicheskim lucham. Moskva, Izd-vo Akad.nauk SSSR. Vol.4. [Variations in the intensity of cosmic rays] Variatsii intensivnosti kosmicheskikh luchei. 1960. 362 p.  
(MIRA 13:10)

1. Mezhdunarodnaya konferentsiya po kosmicheskim lucham. Moscow, 1959. 2. Magnitnaya laboratoriya AN SSSR, Moskva (for Dorman).  
(Cosmic rays)